

AMENDMENTS TO THE CLAIMS

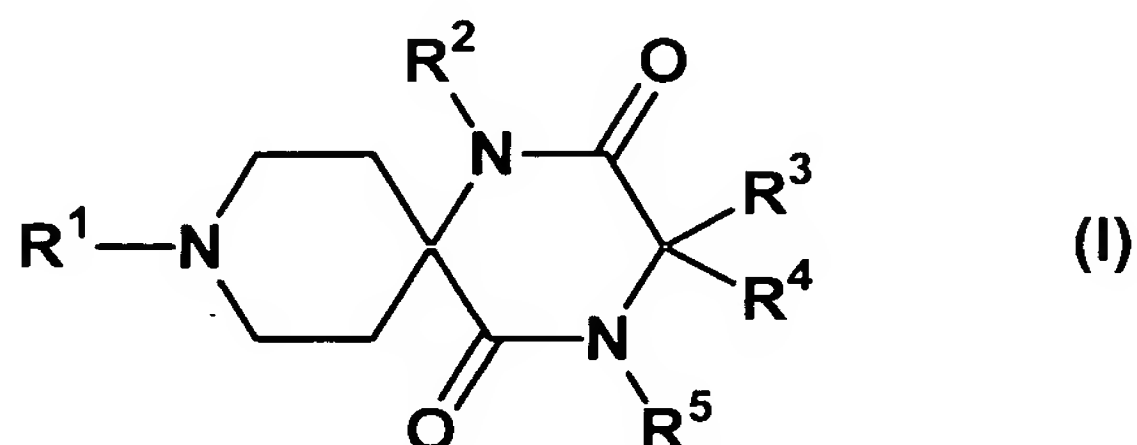
This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. **(Currently Amended)** A method for inhibiting function ~~inhibitor~~ of an effector cell, which comprises administering to a mammal an effective amount of a CCR5 antagonist.
2. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 1, wherein the function is cell migration, cell proliferation or cell activation.
3. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 1, wherein the effector cell is a CCR5-positive effector cell.
4. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 1, which is ~~an agent~~ useful for prevention and/or treatment of a disease caused by effector cell function.
5. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 1, which is ~~an agent~~ useful for prevention and/or treatment of a T cell-mediated disease.
6. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 1, which is ~~an agent~~ useful for prevention and/or treatment of a myeloid cell-mediated disease.
7. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 5, wherein the T cell-mediated disease is transplant rejection, autoimmune disease, allergic disease or ischemic disease.
8. **(Currently Amended)** The ~~function inhibitor of an effector cell~~ method according to claim 6, wherein the myeloid cell-mediated disease is cancer or cancer metastasis.

9. **(Currently Amended)** ~~The function inhibitor of an effector cell method~~
according to claim 1, wherein the CCR5 antagonist is a non-peptide substance.

10. **(Currently Amended)** ~~The function inhibitor of an effector cell method~~
according to claim 1, wherein the CCR5 antagonist is a compound of formula (I)



wherein R^1 represents (1) a hydrogen atom, (2) C1-18 alkyl, (3) C2-18 alkenyl, (4) C2-18 alkynyl, (5) $-\text{COR}^6$, (6) $-\text{CONR}^7\text{R}^8$, (7) $-\text{COOR}^9$, (8) $-\text{SO}_2\text{R}^{10}$, (9) $-\text{COCOOR}^{11}$, (10) $-\text{CONR}^{12}\text{COR}^{13}$, (11) Cyc1 or (12) C1-18 alkyl, C2-18 alkenyl or C2-18 alkynyl substituted with 1-5 substituent(s) selected from (a) halogen, (b) $-\text{CONR}^7\text{R}^8$, (c) $-\text{COOR}^9$, (d) $-\text{OR}^{14}$, (e) $-\text{SR}^{15}$, (f) $-\text{NR}^{16}\text{R}^{17}$, (g) $-\text{NR}^{18}\text{COR}^{19}$, (h) $-\text{SO}_2\text{NR}^{20}\text{R}^{21}$, (i) $-\text{OCOR}^{22}$, (j) $-\text{NR}^{23}\text{SO}_2\text{R}^{24}$, (k) $-\text{NR}^{25}\text{COOR}^{26}$, (l) $-\text{NR}^{27}\text{CONR}^{28}\text{R}^{29}$, (m) Cyc1, (n) keto and (o) $-\text{N}(\text{SO}_2\text{R}^{24})_2$;

R^6 - R^9 , R^{11} - R^{21} , R^{23} , R^{25} and R^{27} - R^{29} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) Cyc1 or (6) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5 substituent(s) selected from (a) Cyc1, (b) halogen, (c) $-\text{OR}^{30}$, (d) $-\text{SR}^{31}$, (e) $-\text{NR}^{32}\text{R}^{33}$, (f) $-\text{COOR}^{34}$, (g) $-\text{CONR}^{35}\text{R}^{36}$, (h) $-\text{NR}^{37}\text{COR}^{38}$, (i) $-\text{NR}^{39}\text{SO}_2\text{R}^{40}$ and (j) $-\text{N}(\text{SO}_2\text{R}^{40})_2$, or

R^7 and R^8 , R^{20} and R^{21} , or R^{28} and R^{29} are taken together to represent (1) C2-6 alkylene, (2) $-(\text{C2-6 alkylene})-\text{O}-(\text{C2-6 alkylene})-$, (3) $-(\text{C2-6 alkylene})-\text{S}-(\text{C2-6 alkylene})-$ or (4) $-(\text{C2-6 alkylene})-\text{NR}^{195}-(\text{C2-6 alkylene})-$, wherein R^{195} is a hydrogen atom, C1-8 alkyl, phenyl, or C1-8 alkyl substituted with phenyl;

R^{10} , R^{22} , R^{24} and R^{26} each independently represents (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl, (4) Cyc1 or (5) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5

substituent(s) selected from (a) Cyc1, (b) halogen, (c) $-OR^{30}$, (d) $-SR^{31}$, (e) $-NR^{32}R^{33}$, (f) $-COOR^{34}$, (g) $-CONR^{35}R^{36}$, (h) $-NR^{37}COR^{38}$, (i) $-NR^{39}SO_2R^{40}$ and (j) $-N(SO_2R^{40})_2$;

R^{30} - R^{37} and R^{39} each independently represents a hydrogen atom, C1-8 alkyl, Cyc1 or C1-8 alkyl substituted with Cyc1, or

R^{35} and R^{36} are taken together to represent (1) C2-6 alkylene, (2) $-(C2-6 \text{ alkylene})-O-(C2-6 \text{ alkylene})-$, (3) $-(C2-6 \text{ alkylene})-S-(C2-6 \text{ alkylene})-$ or (4) $-(C2-6 \text{ alkylene})-NR^{196}-(C2-6 \text{ alkylene})-$, wherein R^{196} represents a hydrogen atom, C1-8 alkyl, phenyl or C1-8 alkyl substituted with phenyl;

R^{38} and R^{40} each independently represents C1-8 alkyl, Cyc1 or C1-8 alkyl substituted with Cyc1;

Cyc1 represents a C3-15 mono-, bi- or tri-(fused or spiro)carbocyclic ring or a 3-15 membered mono-, bi- or tri-(fused or spiro)cyclic hetero ring containing 1-4 nitrogen atom(s), 1-3 oxygen atom(s) and/or 1-3 sulfur atom(s), and Cyc1 may be substituted with 1-5 of R^{51} ;

R^{51} represents (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl, (4) halogen, (5) nitro, (6) trifluoromethyl, (7) trifluoromethoxy, (8) nitrile, (9) keto, (10) Cyc2, (11) $-OR^{52}$, (12) $-SR^{53}$, (13) $-NR^{54}R^{55}$, (14) $-COOR^{56}$, (15) $-CONR^{57}R^{58}$, (16) $-NR^{59}COR^{60}$, (17) $-SO_2NR^{61}R^{62}$, (18) $-OCOR^{63}$, (19) $-NR^{64}SO_2R^{65}$, (20) $-NR^{66}COOR^{67}$, (21) $-NR^{68}CONR^{69}R^{70}$, (22) $-B(OR^{71})_2$, (23) $-SO_2R^{72}$, (24) $-N(SO_2R^{72})_2$, or (25) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5 substituent(s) selected from (a) halogen, (b) Cyc2, (c) $-OR^{52}$, (d) $-SR^{53}$, (e) $-NR^{54}R^{55}$, (f) $-COOR^{56}$, (g) $-CONR^{57}R^{58}$, (h) $-NR^{59}COR^{60}$, (i) $-SO_2NR^{61}R^{62}$, (j) $-OCOR^{63}$, (k) $-NR^{64}SO_2R^{65}$, (l) $-NR^{66}COOR^{67}$, (m) $-NR^{68}CONR^{69}R^{70}$, (n) $-B(OR^{71})_2$, (o) $-SO_2R^{72}$ and (p) $-N(SO_2R^{72})_2$;

R^{52} - R^{62} , R^{64} , R^{66} and R^{68} - R^{71} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) Cyc2 or (6) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc2, $-OR^{73}$, $-COOR^{74}$ or $-NR^{75}R^{76}$, or

R^{57} and R^{58} , R^{61} and R^{62} , or R^{69} and R^{70} are taken together to represent (1) C2-6 alkylene, (2) -(C2-6 alkylene)-O-(C2-6 alkylene)-, (3) -(C2-6 alkylene)-S-(C2-6 alkylene)- or (4) -(C2-6 alkylene)-NR¹⁹⁷-(C2-6 alkylene)-, wherein R^{197} represents a hydrogen atom, C1-8 alkyl, phenyl or C1-8 alkyl substituted with phenyl;

R^{63} , R^{65} , R^{67} and R^{72} each independently represents (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl, (4) Cyc2 or (5) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc2, -OR⁷³, -COOR⁷⁴ or -NR⁷⁵R⁷⁶;

R^{73} - R^{76} each independently represents a hydrogen atom, C1-8 alkyl, Cyc2 or C1-8 alkyl substituted with Cyc2;

Cyc2 has the same meaning as Cyc1, and Cyc2 may be substituted with 1-5 of R^{77} ;

R^{77} represents (1) C1-8 alkyl, (2) halogen, (3) nitro, (4) trifluoromethyl, (5) trifluoromethoxy, (6) nitrile, (7) -OR⁷⁸, (8) -NR⁷⁹R⁸⁰, (9) -COOR⁸¹, (10) -SR⁸², (11) -CONR⁸³R⁸⁴, (12) C2-8 alkenyl, (13) C2-8 alkynyl, (14) keto, (15) Cyc6, (16) -NR¹⁶¹COR¹⁶², (17) -SO₂NR¹⁶³R¹⁶⁴, (18) -OCOR¹⁶⁵, (19) -NR¹⁶⁶SO₂R¹⁶⁷, (20) -NR¹⁶⁸COOR¹⁶⁹, (21) -NR¹⁷⁰CONR¹⁷¹R¹⁷², (22) -SO₂R¹⁷³, (23) -N(SO₂R¹⁶⁷)₂ or (24) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5 substituent(s) selected from (a) halogen, (b) -OR⁷⁸, (c) -NR⁷⁹R⁸⁰, (d) -COOR⁸¹, (e) -SR⁸², (f) -CONR⁸³R⁸⁴, (g) keto, (h) Cyc6, (i) -NR¹⁶¹COR¹⁶², (j) -SO₂NR¹⁶³R¹⁶⁴, (k) -OCOR¹⁶⁵, (l) -NR¹⁶⁶SO₂R¹⁶⁷, (m) -NR¹⁶⁸COOR¹⁶⁹, (n) -NR¹⁷⁰CONR¹⁷¹R¹⁷², (o) -SO₂R¹⁷³, and (p) -N(SO₂R¹⁶⁷)₂;

R^{78} - R^{84} , R^{161} - R^{164} , R^{166} , R^{168} and R^{170} - R^{172} each independently represents (a) a hydrogen atom, (b) C1-8 alkyl, (c) C2-8 alkenyl, (d) C2-8 alkynyl, (e) Cyc6, (f) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc6, -OR¹⁷⁴, -COOR¹⁷⁵, -NR¹⁷⁶R¹⁷⁷ or -CONR¹⁷⁸R¹⁷⁹, or

R^{83} and R^{84} , R^{163} and R^{164} , or R^{171} and R^{172} are taken together to represent (1) C2-6 alkylene, (2) -(C2-6 alkylene)-O-(C2-6 alkylene)-, (3) -(C2-6 alkylene)-S-(C2-6 alkylene)- or (4)

-(C2-6 alkylene)-NR¹⁹⁸-(C2-6 alkylene)-, wherein R¹⁹⁸ represents a hydrogen atom, C1-8 alkyl, phenyl or C1-8 alkyl substituted with phenyl;

R¹⁶⁵, R¹⁶⁷, R¹⁶⁹ and R¹⁷³ each independently represents (a) C1-8 alkyl, (b) C2-8 alkenyl, (c) C2-8 alkynyl, (d) Cyc6 or (e) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc6, -OR¹⁷⁴, -COOR¹⁷⁵, -NR¹⁷⁶R¹⁷⁷ or -CONR¹⁷⁸R¹⁷⁹;

R¹⁷⁴-R¹⁷⁷ each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) Cyc6 or (4) C1-8 alkyl substituted with Cyc6, or

R¹⁷⁸ and R¹⁷⁹ are taken together to represent (1) C2-6 alkylene, (2) -(C2-6 alkylene)-O-(C2-6 alkylene)-, (3) -(C2-6 alkylene)-S-(C2-6 alkylene)- or (4) -(C2-6 alkylene)-NR¹⁹⁹-(C2-6 alkylene)-, wherein R¹⁹⁹ represents a hydrogen atom, C1-8 alkyl, phenyl or C1-8 alkyl substituted with phenyl;

Cyc6 represents a C3-8 mono-carbocyclic ring or a 3-8 membered mono-cyclic hetero ring containing 1-4 nitrogen atom(s), 1-2 oxygen atom(s) and/or 1-2 sulfur atom(s), with the proviso that, Cyc6 may be substituted with 1-5 of R¹⁸⁰;

R¹⁸⁰ represents (1) C1-8 alkyl, (2) halogen, (3) nitro, (4) trifluoromethyl, (5) trifluoromethoxy, (6) nitrile, (7) -OR¹⁸¹, (8) -NR¹⁸²R¹⁸³, (9) -COOR¹⁸⁴, (10) -SR¹⁸⁵ or (11) -CONR¹⁸⁶R¹⁸⁷;

R¹⁸¹-R¹⁸⁷ each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) phenyl or (4) C1-8 alkyl substituted with phenyl, or

R¹⁸² and R¹⁸³, or R¹⁸⁶ and R¹⁸⁷ are taken together to represent (1) C2-6 alkylene, (2) -(C2-6 alkylene)-O-(C2-6 alkylene)-, (3) -(C2-6 alkylene)-S-(C2-6 alkylene)- or (4) -(C2-6 alkylene)-NR²⁰⁰-(C2-6 alkylene)-, wherein R²⁰⁰ represents a hydrogen atom, C1-8 alkyl, phenyl, C1-8 alkyl substituted with phenyl;

R² represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) -OR⁹⁰, (6) Cyc3 or (7) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5

substituent(s) selected from (a) halogen, (b) $-OR^{90}$, (c) $-SR^{91}$, (d) $-NR^{92}R^{93}$, (e) $-COOR^{94}$, (f) $-CONR^{95}R^{96}$, (g) $-NR^{97}COR^{98}$, (h) $-SO_2NR^{99}R^{100}$, (i) $-OCOR^{101}$, (j) $-NR^{102}SO_2R^{103}$, (k) $-NR^{104}COOR^{105}$, (l) $-NR^{106}CONR^{107}R^{108}$, (m) Cyc3, (n) keto and (o) $-N(SO_2R^{103})_2$;

R^{90} - R^{100} , R^{102} , R^{104} and R^{106} - R^{108} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) Cyc3 or (6) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc3, or

R^{95} and R^{96} , R^{99} and R^{100} , or R^{107} and R^{108} are taken together to represent (1) C2-6 alkylene, (2) $-(C2-6 \text{ alkylene})-O-(C2-6 \text{ alkylene})-$, (3) $-(C2-6 \text{ alkylene})-S-(C2-6 \text{ alkylene})-$ or (4) $-(C2-6 \text{ alkylene})-NR^{201}-(C2-6 \text{ alkylene})-$, wherein R^{201} is a hydrogen atom, C1-8 alkyl, phenyl or C1-8 alkyl substituted with phenyl;

R^{101} , R^{103} and R^{105} are each independently (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl or (4) Cyc3, or C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc3;

Cyc3 has the same meaning as Cyc1, and Cyc3 may be substituted with 1-5 of R^{109} ;

R^{109} has the same meaning as R^{51} ;

R^3 and R^4 each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) $-COOR^{120}$, (6) $-CONR^{121}R^{122}$, (7) Cyc4 or (8) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5 substituent(s) selected from (a) halogen, (b) nitrile, (c) Cyc4, (d) $-COOR^{120}$, (e) $-CONR^{121}R^{122}$, (f) $-OR^{123}$, (g) $-SR^{124}$, (h) $-NR^{125}R^{126}$, (i) $-NR^{127}COR^{128}$, (j) $-SO_2NR^{129}R^{130}$, (k) $-OCOR^{131}$, (l) $-NR^{132}SO_2R^{133}$, (m) $-NR^{134}COOR^{135}$, (n) $-NR^{136}CONR^{137}R^{138}$, (o) $-S-SR^{139}$, (p) $-NHC(=NH)NHR^{140}$, (q) keto, (r) $-NR^{145}CONR^{146}COR^{147}$ and (s) $-N(SO_2R^{133})_2$;

R^{120} - R^{130} , R^{132} , R^{134} , R^{136} - R^{138} , R^{145} and R^{146} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) Cyc4 or (6) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc4, halogen, $-OR^{148}$, $-SR^{149}$, $-COOR^{150}$ or $-NHCOR^{141}$, or

R^{121} and R^{122} , R^{129} and R^{130} , or R^{137} and R^{138} are taken together to represent (1) C2-6 alkylene, (2) -(C2-6 alkylene)-O-(C2-6 alkylene)-, (3) -(C2-6 alkylene)-S-(C2-6 alkylene)- or (4) -(C2-6 alkylene)-NR²⁰¹-(C2-6 alkylene)-, wherein R^{201} represents a hydrogen atom, C1-8 alkyl, phenyl, C1-8 alkyl substituted with phenyl;

R^{131} , R^{133} , R^{135} , R^{139} and R^{147} each independently represents (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl, (4) Cyc4 or (5) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc4, halogen, -OR¹⁴⁸, -SR¹⁴⁹, -COOR¹⁵⁰ or -NHCOR¹⁴¹;

R^{140} represents a hydrogen atom, -COOR¹⁴² or -SO₂R¹⁴³;

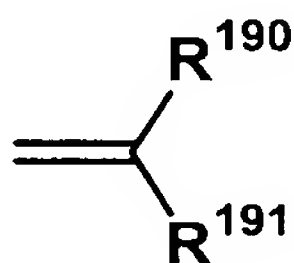
R^{141} - R^{143} each independently represents (1) C1-8 alkyl, (2) C2-8 alkenyl, (3) C2-8 alkynyl, (4) Cyc4 or (5) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc4;

R^{148} - R^{150} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) Cyc4 or (6) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with Cyc4;

Cyc4 has the same meaning as Cyc1, and Cyc4 may be substituted with 1-5 of R^{144} ;

R^{144} has the same meaning as R^{51} , or

R^3 and R^4 are taken together to represent



wherein R^{190} and R^{191} each independently represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) C2-8 alkenyl, (4) C2-8 alkynyl, (5) -COOR¹²⁰, (6) -CONR¹²¹R¹²², (7) Cyc4 or (8) C1-8 alkyl, C2-8 alkenyl or C2-8 alkynyl substituted with 1-5 substituent(s) selected from (a) halogen, (b) nitrile, (c) Cyc4, (d) -COOR¹²⁰, (e) -CONR¹²¹R¹²², (f) -OR¹²³, (g) -SR¹²⁴, (h) -NR¹²⁵R¹²⁶, (i) -NR¹²⁷COR¹²⁸, (j) -SO₂NR¹²⁹R¹³⁰, (k) -OCOR¹³¹, (l) -NR¹³²SO₂R¹³³, (m) -NR¹³⁴COOR¹³⁵, (n) -

$\text{NR}^{136}\text{CONR}^{137}\text{R}^{138}$, (o) $-\text{S}-\text{SR}^{139}$, (p) $-\text{NHC}(=\text{NH})\text{NHR}^{140}$, (q) keto, (r) $-\text{NR}^{145}\text{CONR}^{146}\text{COR}^{147}$ and (s) $-\text{N}(\text{SO}_2\text{R}^{133})_2$;

$\text{R}^{120}-\text{R}^{140}$ and $\text{R}^{145}-\text{R}^{147}$ have the same meanings as described above;

R^5 represents (1) a hydrogen atom, (2) C1-8 alkyl, (3) Cyc5 or (4) C1-8 alkyl substituted with Cyc5;

Cyc5 has the same meaning as Cyc1, and Cyc5 may be substituted with 1-5 of R^{150} ;

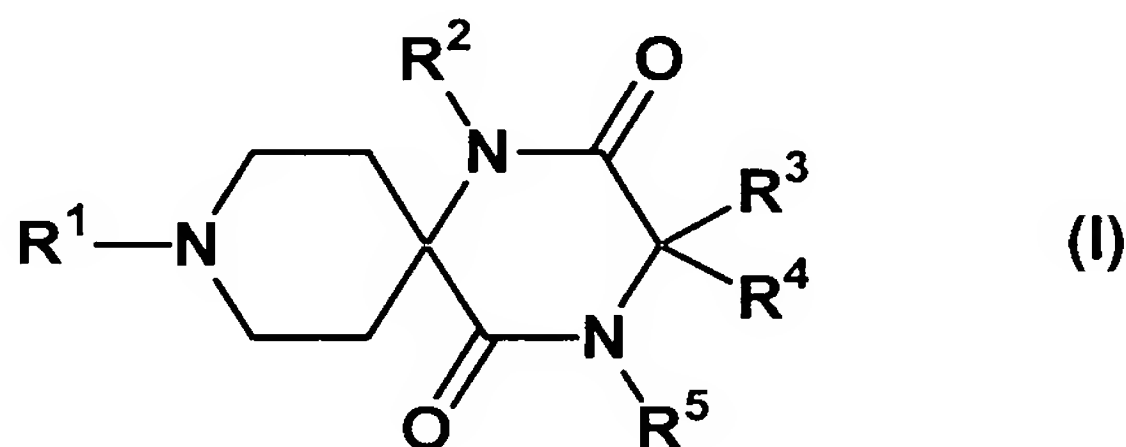
R^{150} has the same meaning as R^{51} ;

an N-oxide thereof, a salt thereof, or a prodrug thereof.

11. **(Original)** A medicament which comprises a function inhibitor of an effector cell comprising a CCR5 antagonist, in combination with one, two or more immunosuppressive drug(s).

12. **(Original)** The medicament according to claim 11, wherein the one, two or more immunosuppressive drug(s) are selected from the group of tacrolimus, cyclosporine, sirolimus, corticosteroid, azathioprine, mycophenolate mofetil, FTY-720 and cyclophosphamide.

13. **(Currently Amended)** ~~A method for prevention and/or treatment of a disease caused by effector cell function, which comprises administering to a mammal an effective amount of~~ The medicament according to claim 11, wherein the CCR5 antagonist is a compound of formula (I)



wherein all symbols have the same meanings as those defined in claim 10,
an N-oxide thereof, a salt thereof, or a prodrug thereof.

Claim 14. **(Cancelled)**